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ABSTRACT

A study was conducted to determine whether the child expresses linguistic knowledge during the single-word period. The order of mention in 65 sets of successive single-word utterances from five children at Stage 1, two to four years old, were analyzed. To elicit speech, the children were shown line drawings representing such situations as animate agent, inanimate agent, animate object, inanimate object, agent present, agent absent, instrument present, and instrument absent. Some pictures had a focus object, which was accomplished by having one object in the picture colored--the agent, the object, or the instrument. Pictures were counterbalanced with respect to semantic factors (in some pictures cats chase dogs while in others dogs chase cats). The children's vocabulary was also tested. Results show that significantly more of children's successive single-word utterances describing reversible pictures are ordered agent/object than are ordered object/agent (the order of mention reflects English word order). Children also mention generic terms before specific ones significantly more often than they mention specific terms. Possible reasons for the appropriately ordered successive single-word utterances are discussed, as is the question of whether the single-word word stage is presyntactic. The data suggest that word order is related to cognition, and is not an aspect of syntax divorced from the child's other experiences. (SW)

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LINGUISTIC KNOWLEDGE AT EARLY STAGE I; EVIDENCE FROM SUCCESSIVE SINGLE WORD UTTERANCES

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Recent controversy surrounds the issue of whether or not the child expresses linguistic knowledge during the single word period (Bloom, 1973; Greenfield and Smith, 1976; Dore, 1975; Rodgon, Jankowski, and Alenskas, 1975). Evidence for semantic knowledge has come from Greenfield's analysis of the way single words combine with non-linguistic elements and from the progression of case relations. Bloom and others have criticized the use of "rich" interpretation to attribute linguistic structure in the one-word stage. One main criticism focuses on the role of appropriate word order as a criterion of syntax. The present paper presents evidence for linguistic knowledge in the single-word period that can withstand this sort of criticism: appropriately ordered successive single word utterances.

The single word period

The single word period has not been clearly defined. Brown refers to pre-Stage I language, when successive single word utterances are frequent, as the "prior single word period." Stage I begins as soon as MLU rises above 1.00; the target value for Brown was 1.75. All children in Brown's "prior single word period" occasionally produce two word utterances, so their MLU must be above 1.00. Stage I is sometimes divided into Early Stage I (MLU less than 1.50) and Late Stage I (MLU over 1.50). The single word period occurs in Early Stage I. It is not clear, however, what the upper boundary for the single word stage is when successive single word utterances often occur. The following are MLU's for children considered by Brown and Bloom to still be in this single word stage:

Allison, MLU 1.18[1], age 20 months 3 weeks

Eric, MLU 1.19, age 20 months 2 weeks

Gia, MLU 1.12, age 19 months 1 week

This single word stage, apparently, is very early in Stage I. The upper boundary is somewhere around 1.20. I will refer to this single word stage when successive single word utterances are frequent as "Very Early Stage I."

[1] Computed from her corpus

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I will be arguing that the transition between the single word period--very early Stage I--and late Stage I is not the large 'gap' previously believed. In addition to the data on order of mention in successive single word utterances, the present paper re-examines previous data on the single-word period and finds that the infrequent two-word utterances produced in this period are very similar to those produced during late Stage I. This suggests that stringent criteria of productivity--such as Bloom's requirement that a structure occur five times or more in order to count as productive--may have obfuscated the similarities between the single word period and late Stage I.

Successive single word utterances and word order

Many researchers have noticed the appearance of successive single word utterances just prior to the start of two-word sentences and virtually all have emphasized their varying order (Brown, 1973). Bloom (1973) gives the fullest analysis of the phenomenon. She says:

> The order in which the forms occurred...was variable... There is still no immediate explanation of what determined the order of mention in these events. Factors of focus, salience, or relative importance were no doubt involved but these aspects of events could not be readily defined in the data. Several things were clear, however. Successive single word utterances presented evidence of awareness of the intersection of different aspects of a situation. The relations among the separate utterances were a function of the relations among the different aspects of behavior and context in perceived or mentally represented events. There was no evidence for postulating a matching between the successive utterances and an underlying linguistic (sentence) representation. (p. 53).

She goes on to say that "what is important is the impressive evidence of the child's awareness of relationships among aspects of the situation and his obvious inability to code these relationships linguistically" (p. 54). The reason single word utterances cannot be characterized as "sentences", according to Bloom, is "that the children did not as yet know the LINGUISTIC CODE for mapping conceptual notions onto semantic-syntactic relations in sentences" (p. 55). The presumative fact that successive single word utterances lack consistent order is often cited as evidence that knowledge at the single-word stage is non-linguistic.

Word order as evidence of syntactic knowledge

Many investigators contend that the primary phenomenon to be explained with regard to early language is the transition from one-word speech to syntax. One way to approach the transition problem is to ask when syntax begins. Almost all researchers discuss criteria for syntax. Word order is central to everyone's criteria.

Brown (1973), for example, believes that "appropriate word order is interpretable as evidence that the child has such intentions (semantic intentions) and is describable as one of the first aspects of syntax that

the child controls" (p. 147). Brown contrasts the appropriateness of the word order in two-word utterances with the variable order of mention in successive single one-word utterances, indicating that with the latter, the child does not have the ability, the intention, or the syntax to express semantic relationships. He says further "The child's use of just that order which is appropriate in the model language for the relations existing in the situation, an order corresponding to the inclination of the interpreting adult, constitutes a kind of discriminating response on the child's part giving evidence that he and not only the observing adult has certain semantic relations in mind" (p. 148). Word order, then, is considered one of the best indications that the child possesses linguistic knowledge--everyone agrees on this point. Unordered successive single word utterances are often cited as evidence of non-linguistic knowledge during the single word period.

Order of mention in successive single word utterances

The present study analyzes the order of mention in 65 sets of successive single word utterances from five children at Stage I, MLU's 1.08, 1.20, 1.23, 1.30, and 1.59. The children were part of a larger sample of children (54) between the ages of 2;0 and 4;2.

Procedure

To elicit speech, the children were shown line drawings, on 5" x 8" index cards, mounted in a loose leaf binder. The binder was divided into three parts. Part I consisted of pictures similar to an experimental set, with single-sentence descriptions written underneath. This part was used for a "warm-up" section, and also served to model the child's task. The sentences used in this section did not model any unusual syntactic structure--all were simple, active, affirmative, declarative. Examples include: "The boy's taking a bath," "The flower is pretty," "Daddy talks on the telephone," and "The children are building a snowman."

Part II was the experimental section. Forty-four pictures represented such situations as animate agent, inanimate agent, animate object, inanimate object, agent present, agent absent, instrument present, and instrument absent. Some pictures had a focus object; this was accomplished by having one object in the picture colored--the agent, the object, or the instrument. Pictures were counterbalanced with respect to semantic factors; for example, in some pictures cats chase dogs while in others dogs chase cats. They were also counterbalanced with respect to position.

All stimuli were pre-tested with ten children aged two to four years to determine whether objects and actions seemed familiar to the children. All items with unusually low response rates were omitted.

Subjects were tested in their homes with a parent present. The sessions were tape recorded, and a sample of spontaneous speech was recorded before and after the actual experiment. The experimenter, a parent, and sometimes an observer were present. Prior to the task, the experimenter chatted with the mother and played with the child until the child was at ease. In the first section, the experimenter read to the child and the pictures were discussed. At this point, if the child did not volunteer

comments about the pictures, s/he was asked direct questions with regard to "The boy's taking a bath," etc. In the second section--the experimental section--the child was asked to tell about the pictures. If s/he only named objects, s/he was asked "What about the X and Y?" or "What's happening with that X and that Y?" Throughout this section, the child was not required to carry the conversational ball alone; the experimenter continued encouraging and chatting with the child to avoid an artificial situation.

In the third section--the vocabulary check--the child was presented with pictures of objects from the experimental section and asked, "What's that?" An observer made note of relevant non-verbal responses during the entire experiment.

Elicited versus spontaneous speech

Horgan (1975) determined that the language elicited by the pictures was as linguistically mature as spontaneous language. The following criteria were used:

(1) MLU's of elicited and spontaneous language were close (an average difference of less than .1 between the two measures, with elicited MLU being slightly higher as often as spontaneous MLU was slightly higher).

(2) Parents reported that their child was speaking up to her/his capacity.

(3) Grammatical forms elicited during the experimental task were appropriate for children with the same MLU computed on spontaneous speech. This was established by comparing the semantic relations and the grammatical morphemes used by children in the elicited condition with Brown's (1973) analysis of semantic relations and initial grammatical morphemes. The elicited language contained those semantic relations and grammatical morphemes that Brown found.

Results

Five children in the sample were in Stage I. They produced a total of 65 sets of successive single word utterances. The order of mention of these is summarized in Table 1.

These results show that significantly more of children's successive single utterances describing reversible pictures are ordered agent/object than are ordered object/agent. That is, the order of mention reflects English word order. Adding together all orders that reflect correct English word order (agent/object, agent/action, action/object, noun/locative, and demonstrative/noun), 29 pairs of successive single word utterances reflect English word order. Adding together those that reflect inappropriate word order (object/agent, action/agent, object/action, locative/noun, noun/demonstrative, only 11 pairs of successive single word utterances do not conform to English word order, ($p < .01$).

Besides the fact that order of mention in successive single word utterances usually corresponds to English word-order, the data in Table I

Table 1

Frequency of Various Orders of Mention

Order Contrasts	Frequencies		
	Pictures		
	Reversible	Non-Reversible	
		Animate Subj/ Inan. Obj.	Inan. S/ Anim. O.
Agent/Object--Object/Agent	14 -- 6*	4 -- 1	0 -- 2
Agent/Action--Action/Agent	____	1 -- 0	0
Action/Object--Object/Action	____	2 -- 0	0
	All Pictures		
Generic/Specific--Spec./Gen.	10 -- 1**		
Noun/Locative--Locative/Noun	4 -- 2		
Noun/Attributive--Attrib./Noun	2 -- 0		
Demonstrative/Noun--Noun/Demon.	4 -- 0		
Noun/Possessive--Possess./Noun	1 -- 0		

*p .05

**p .01

show that children mention generic terms before specific ones significantly more often than they mention specific terms.

Two questions need to be answered about these data: (1) Why have other researchers not found successive single word utterances ordered to reflect adult word order, and (2) what do these children "know" about language? Is their knowledge primarily syntactic or semantic?

Possible reasons for appropriate word order

Such results might only appear in neutral situations. If the child's attention is grasped by one aspect of the situation, s/he is likely to name that aspect first. In naturalistic settings, one would expect that the situation would rarely be neutral. To examine the hypothesis that in non-neutral situations, children will name the object first that captures their attention first, we can consider non-neutral pictures. Responses to the focus items show what happens if the situation is not neutral.

On the focus pictures, Amy and Elizabeth always responded with the colored item first when their response mentioned one of the three objects. (A response of Broke, for example, would not be counted.) Jess and Doug always responded with Ball--the instrument--first. Both said Ball first in every picture with a ball, showed great interest in balls, showed me their favorite ball, demonstrated its use, and gave responses like Ball. Football; ball. Baseball.

It is important to note that only a few items would excite each child, so it was easy to determine what was salient to her/him. Besides some children's interest in balls, children living by a railroad track showed great interest in trains, while children living in married student housing near a bus line showed great interest in buses. A child whose family had a Volkswagen bus interpreted the bus picture as a "VW bus." One child whose father had a motorcycle said "Kawasaki" when shown a picture of a girl riding a bike.

Tim, when presented with a focus picture or any other picture that included a boy, named the boy first--with his name. All of these examples are evidence that children are influenced by factors of focus and saliency, so one would expect in naturalistic situations to see more variation in order of mention than was seen in the present study.

It may be that children only order utterances if they grasp the whole situation. Bloom distinguishes between chained responses and holistic responses. Chained responses "accompany performance of schemes" (p. 51), while holistic responses occur "with a mental representation of the complete scheme from the outset" (p. 52). Only holistic responses seem to show semantic ordering. Looking at these data, we find that when children name only one aspect of the situation, it is likely to be the result of a saliency strategy, rather than a linguistic strategy. Four of the children gave enough one-word only responses to postulate the following strategies:

(a) Name the person in the picture with the same sex as yourself.

(b) Name the thing on the left.

(c) Name the actor.

(d) Name the thing that really catches your eye.

Jeff used strategy (d) whenever a ball was in a picture. In pictures without balls, he used strategy (b). Tim used strategy (a) whenever a boy was present in a picture. In pictures without boys, he used strategy (c). Amy used strategy (d) on the focus items (she named the colored items) and on pictures with buses. She used strategy (b) elsewhere. Elizabeth used strategy (d) on focus items and pictures with bicycles. In other pictures, she used strategy (a). In pictures without a focus item, a bicycle, or a girl, she used strategy (b).

Strategies (a), (b), and (d) are perceptual or saliency strategies, while (c) is a semantic strategy. Only Tim used the semantic strategy and he used it only when (a) did not apply. (These strategies also account for many of the object/agent ordered utterances.) These data indicate that if the children did not have a "mental representation of the complete scheme" and hence responded with only one word, the response was based on focus or saliency. Perhaps in real-world situations, children are less likely to grasp the whole situation, and thus more likely to rely on saliency and perceptual strategies.

It is not surprising, therefore, that appropriately ordered successive single word utterances would not show up in naturalistic settings. For one thing, the requisite neutral situations would rarely occur. Usually a child would be involved or interested in one aspect of the situation. Second, a child may be more easily distracted in a naturalistic setting. Third, with noun-noun pairs, the order would correspond to actor/object order half the time, so that a large sample of successive single word utterances would be necessary to confirm a hypothesis of appropriate ordering. Finally, reversible situations are relatively rare, so that at best, one would have evidence only for an ordering based on an animate/inanimate distinction rather than an ordering based on an actor/object distinction.

It might be argued that the experimental method of the present study, as opposed to methods employing naturalistic settings, inhibited the children's performance. It might be suggested, for example, that the subjects who produced successive single word utterances in this study are children who "knew" how to produce sentences with subjects and objects, but that they failed to produce such sentences because they were inhibited by the experiment. Besides the comparison of elicited and spontaneous language reported earlier, we can look at data from older children to disconfirm such an hypothesis. If the hypothesis were true, then children who "knew" how to produce sentences with subjects and objects, when inhibited would produce ordered successive utterances. Children past stage I often talk about each aspect of the situation without expressing the semantic relationship agent/object; for example, Dog and cat running; That's a boy; That's a girl; the cat has a tail and the dog's big, etc. If we consider order of mention on reversible items for children in stages I-III (MLU 1.00 to 3.12) versus children in stage IV and beyond (MLU 3.13 to 5.0), we find the percentage of agent/object utterances in the first group to be 70% ($p < .025$), while in the second group, it falls to 50%, just chance. In other words, the older

children who "know" the semantic relationship agent/object and have experience in expressing it syntactically, no longer order their mention of agent and object when not explicitly stating the relationship. (Horgan, 1975, discusses why older children no longer order utterances according to word order.) Clearly, then, the finding of appropriately ordered successive single word utterances at stage I is not merely the result of poor performance.

Finally, appropriately ordered successive single word utterances may be a phenomenon particular to late talkers. All five subjects in stage I were relatively late talkers in comparison to children studied by Brown, Bloom, and Bowerman. Parents have long suspected that late talkers are learning something about language before they begin to use syntax.

Linguistic knowledge during early stage I

Before examining the theoretical significance of ordered successive single word utterances, we must look closer at other linguistic behavior of children producing successive single word utterances. In particular, we must consider the question of whether the single word stage is presyntactic.

What kind of two-morpheme constructions occur in Very Early Stage I? There is data from Bloom's study of Allison, Eric, and Gia, and from Bowerman's study of Kendall. Table 2 gives the frequencies or percentages of constructions used in the spontaneous speech of these children and the frequencies in the elicited speech of the five children in the present study. Table 2 shows that even in Very Early Stage I, children indicate some evidence of word order in their two-word sentences, and thus of "semantic intention" and "knowledge of the linguistic code." Many relations have very few instances, but each of the two-term constructions is well-represented in at least one subject's data. If we compare this Very Early Stage I data with data from Brown's subjects (Eve, Sarah and Adam) in Late State I, we find not much difference in the percentages of two-term semantic relations. Table 3 gives these data. For most subjects, it appears that Very Early Stage I is not much different from the rest of Stage I. The main difference is an increase in the frequency of two-word utterances. (Allison may be an exception, since most of her "entity/attribute" utterances used "more.") Very Early Stage I does not appear to be qualitatively different from Late Stage 1, contrary to what Bloom and others have claimed. As Brown has suggested, the reason for the lack of more two-word sentences seems to be one of expression. Children know something about semantic relations, and sometimes, but rarely, express their knowledge syntactically. (Tables 2 & 3 next page.)

Bowerman's (1972) summary of the differences between Early Stage I and Late Stage I also applies to the differences between Very Early Stage I and Late Stage I: "The structural relations which constitute the common core of the Early Stage I samples continue to be the bases of most Late Stage I constructions. There are few totally new construction patterns" (p. 9).

Table 2

Frequency of Semantic Relations in Two or More Word Utterances

	Child and MLU								
	Spontaneous Speech[a]				Elicited Speech				
Construction	Kendall 1.10	Allison 1.18	Eric 1.19	Gia 1.12	A.P. 1.08	J.B. 1.20	D.C. 1.23	T.P. 1.30	E.W. 1.59
agent/action	27%	2	0	1	0	1	0	3	4
action/object	7%	0	7	1	1	1	0	0	1
agent/object	5%	1	0	2	0	0	1	0	0
action/locative	3%	12	0	1	0	0	0	2	0
entity/locative	18%	1	5	5	0	0	1	0	0
possessor/possession	19%	1	0	3	3	2	0	0	0
entity/attribute	6%	22	17	8	0	0	0	1	1
demonstrative/entity	1%	0	4	10	0	3	0	2	2
agent/action/object	0%	0	4	0	0	1	0	0	1
agent/action/locative	0%	0	0	0	0	0	0	0	0
agent/object/locative	0%	0	0	0	0	0	0	0	0
action/object/locative	0%	0	1	0	0	0	0	1	1

[a]Data from Bowerman & Bloom

Table 3

Percentage of Semantic Relations in Late Stage I[a]

	Child and MLU		
Construction	Eve 1.68	Sarah 1.73	Adam 2.06
agent/action	10	6	7
action/object	10	4	16
agent/object	9	0	0
action/locative	1	1	5
entity/locative	5	1	2
possessor/possession	10	7	11
entity/attribute	4	6	5
demonstrative/entity	3	10	1
agent/action/object	3	4	6
agent/action/locative	0	1	3
agent/object/locative	0	0	1
action/object/locative	0	0	0

[a]Data from Brown

Theoretical significance of appropriately ordered successive single word utterances

Successive single word utterances are further evidence--beyond the reanalysis of two-word utterances in the previous section and the data from Greenfield and Smith (1976)--that children at the end of the single word period know something of the semantic relations they will be using in later sentences and that they know something of at least one aspect of syntax--word order. But more importantly, these data suggest that children, just prior to consistent use of syntax, are structuring experience and reality into the semantic categories that will be appropriate for later sentences. Syntax at this stage is not arbitrary and language-specific, but a direct reflection of the way the child is organizing experience. The categories the child uses are more than just cognitive in Bloom's sense; they reflect semantics as well and are thus linguistic. These data suggest that word order is related to cognition, and not an aspect of syntax divorced from the child's other experiences. For example, in some cases focus of attention or saliency determined the order of mention. On the other hand, when the pictures were neutral to the child, the semantic relation determined the order of mention. This indicates that the agent "captures" the child's attention before the object does, much as the train captures a child's attention if trains are salient to him/her. The child's first hypothesis of word order is, then, that word order reflects saliency or focus of attention. In neutral situations, agents catch the child's attention first because causes precede events, actions start with actors and end with object, etc. That is, the temporal order of the relationship can be reflected in the sequential order of words. It is surely a cognitive prerequisite for syntax that the child's awareness of perceptual ordering be reflected in verbal ordering.

As discussed earlier, subjects in the present study were "late talkers." Their understanding of semantic categories may be ahead of previously studied children in Very Early Stage I. Even if all children do not go through a stage of ordered successive utterances, it is significant that what the late talker is learning deals with semantic relations and word order--exactly the same things the early talker, e.g., Allison, is learning at a later stage. Data from successive single word utterances suggest there may well be significant and dramatic individual differences in the single word period. As Bever (1970) has pointed out, there are different sorts of linguistic performance; ordering successive single word utterances is different from producing a sentence, but it shows related linguistic knowledge and maturity.

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